

MAROON AND WATT



W5AC.TAMU.EDU

Get Connected

Website:
w5ac.tamu.edu

Join the Discord:
discord.gg/DTayRj89rd

Instagram:
@tamu_w5ac

Twitter:
@tamu_w5ac

Mastodon:
@w5ac@mastodon.radio

Repeater Information

W5AC has 4 repeaters, which are located on the Oceanography and Meteorology building. For more information, visit w5ac.tamu.edu/repeaters

W5AC 2m
146.820 MHz -0.6 MHz
PL 88.5/110.9

W5AC 1.25m
223.820 MHz -1.6 MHz
PL 88.5/110.9

W5AC 70cm
443.050 MHz +5 MHz
PL 88.5/110.9

W5AC 70cm DMR
441.3625 MHz +5 MHz
CC12

AllStarLink
49382

Echolink
W5AC-R

BM Talkgroup
3167972

Broadcastify
40779



W5AC Leadership

President:

Katherine Forson KT5KMF

Vice President:

Sanjay Patel KI5YAZ

Secretary:

Braxton Wade N5REV

Treasurer:

Elliott Sankus N5ESX

Primary Advisor:

Dr. Kevin Nowka

Secondary Advisor:

Dr. John Bosshard AD5RN

Trustee:

Dr. John Bosshard AD5RN

Club Historian:

Dave Gent W5QZ

Digital Infrastructure Director:

Ian Duncan AE5ID

Director of Operations:

James Ervin KI5UXW

Equipment Director:

Matthew Cadman KJ5IIF

Newsletter Editor:

Katherine Forson KT5KMF

Public Relations Director:

Bailey Hollis KJ5CPO

QSL Manager:

Sanjay Patel KI5YAZ

Repeater Administrator:

Ian Duncan AE5ID

Shack Director:

Dave Gent W5QZ

Contact us: clubofficers.w5ac@gmail.com

W5AC Foxhunt Team Solves Airport Radio Interference

by Dave W5QZ

On Saturday, March 29, W5AC members travelled to Bryan Coulter Airfield with their Radio Direction Finding (Foxhunt) gear to locate and eliminate a serious source of radio interference to the main radio communication channel of 123.00 MHz. For several weeks a mysterious and strong transmitter had been jamming the channel 24 hours every day. There was no modulation – just a constant AM carrier.

The first directional bearing was taken at the terminal parking lot, and the target source was somewhere to the south.

Accompanied by Airfield personnel, the Team moved past the flightline to the most southern point of the Airfield property. Bearings taken here pointed back to the north, indicating the source was somewhere back towards the parking lot. At least the problem was not off site!

The Team then split into small groups and systematically searched around the many hangars. Some members had directional antennas, while others used HTs with body fading. In less than 30 minutes, all Team members agreed the source was inside a certain hangar. However, they could not enter the hangar without the owner's permission.

Airfield personnel contacted the owner, who eventually arrived and opened the hangar. The source was quickly identified as a golf cart stored in the hangar. This golf cart had an aircraft radio with a faulty microphone push-to-talk stuck down. The golf cart was connected to a battery charger which kept the radio constantly transmitting.

The owner threw away the faulty microphone, but the Team retrieved it from the trash to retain as a Club souvenir. The picture shows the Team with their Foxhunting



The golf cart containing the aircraft radio

equipment in front of the hangar. Dave W5QZ is holding the bad microphone.

This was an enjoyable and educational experience and a valuable public service where W5AC members restored the Airfield main communication channel to a safe operational condition.



In total, 9 volunteers traveled to the airport to help with various amateur radio direction finding equipment. Pictured from left to right: Seungheon Oh, Travis KI5TMS, Braxton N5REV, Christopher KJ5IBX, Dave W5QZ, Ian AE5ID, Matthew KJ5IIF, James KI5UXW, and Katherine KT5KMF.

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Congratulations to:

New licensees:

- Amariss KJ5KPW
- Anahita KJ5KSK
- Anthony KJ5KPX
- David KJ5KPS
- Jackson KJ5KSJ
- Jenna KJ5KSN
- Noah KJ5KSL
- Peyton KJ5KSM
- Ronin KJ5KPR

Upgrades to General:

- Christopher KJ5IBX
- Kenzie WX5KNZ

Testing to Date

So far this school year, W5AC has administered 98 exam elements for 51 different individuals.

- 34 individuals passed the Technician class licensing exam
- 12 individuals passed the General class exam
- 2 individuals passed the Amateur Extra class exam

Our VE team looks forward to continuing to provide testing services to the A&M community!

President's Message

Howdy W5AC! I'm so excited to see our club's newsletter come back and I hope you enjoy reading about what we've all been up to! W5AC has had a really great semester so far. We've helped a lot of new hams get licensed, had a great presence at outreach events, and provided many opportunities for members to be active and get on the air! We had lots of people stop by our table at Night at the ZACH to learn more about our hobby, and just days before we coordinated an event with the Texas Aggie Storm Chasers to help meteorology students get introduced to our amazing hobby as well. Members have had plenty of chances to just hang out and study recently too, with plenty of shack study sessions and our March dinner event at Fuego Tortilla Grill. Our Director of Operations has planned a lot of on campus operating events to allow for more opportunities for everyone to get on the air. Also, make sure to check out our social media! Our new Public Relations Director has done a wonderful job of keeping everyone updated with our recent activities there. Our elections meeting is coming up soon, and I'm excited to see what's in store for next year!



W5AC had a table at this year's Night at the ZACH event for participants of the Texas Science and Engineering Fair! Here members Bailey KJ5CPO and James KI5UXW can be seen talking about our club, while Matthew KJ5IIF adjusts the radio set up on the table.





Our Director of Operations, James KI5UXW, has been hosting lots of on-campus operating events! These are a great opportunity not only for our newer members to get on the air, but also to hopefully get more students interested in amateur radio. Watch for announcements on Discord and Listserv to see when James will be operating next!

In early March, club members met at Fuego Tortilla Grill for tacos and ragchewing! Everyone enjoyed a chance to take a break from studying, talk about radio and non-radio topics alike, and have some amazing food!



Another student organization on campus, the Texas Aggie Storm Chasers (TASC), uses ham radio for storm chasing! W5AC hosted a joint event with TASC outside the Oceanography and Meteorology building to allow TASC members a chance to practice using a ham radio and learn more about the hobby. Hams from both organizations had a lot of fun and were able to learn a lot from each other!

W5AC Activation on W5T/ST-012 & US-3504

by James KI5UXW

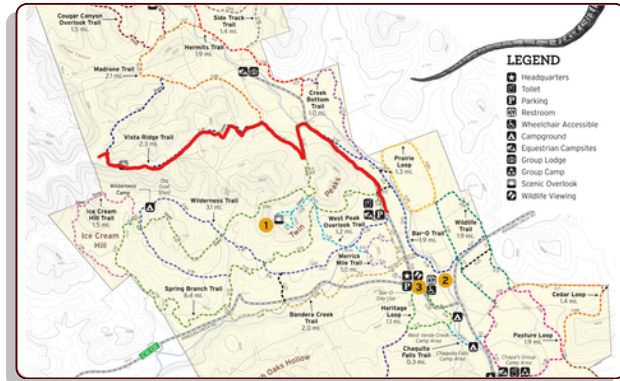
Howdy Hams!

Recently, a couple of us here at W5AC planned a weekend trip to Hill Country State Natural Area (POTA Entity US-3504) over in Bandera, Texas. With KL4LJ planning, we were able to find a route that would take us up to the summit with minimal bush whacking, if any.

The evening before we left for Bandera, we deployed some equipment in my backyard in Austin to test it out and make sure nothing was broken. The 20m dipole didn't work well (SWR was too high for Matthew's IC-705) in the L shape. The most portable antenna I had was my ARRL EFHW kit but I had concerns about not being able to get the antenna up off the ground and the resulting decrease in performance. KL4LJ assured me that I was going to be fine, based on his previous SOTA activations.

We'd settled on Matthew's Super Antenna MP1, my EFHW, and my 20m dipole. The plan was to get two stations going (my Xiegu G90 on SSB with the EFHW and Matthew's ICOM IC-705 on FT8 with the Super Antenna) with the 20m dipole being the back-up for either. Unfortunately, we wound up going to bed around midnight which was problematic as we were planning to be out the door around 5:30 and arrive at the park when it opened around 8 AM.

The drive to Bandera was pretty uneventful with minimal traffic but with very nice scenery once we got past Helotes (where one of my tíos and tías live). Living in suburban Austin (and now in College Station), I rarely see how dynamic the Hill Country's geography is and so I relished the opportunity to take it in. I didn't get too many good pictures on the drive as I was in the back seat but Matthew got a number of nice ones.



A map of the path we took to get up the summit outlined in red to a part of park property within the SOTA activation zone.



Hudson Spillers (KL4LJ) and Matthew Cadman (KJ5IIF) testing a 20m dipole with an ICOM IC-705. The dipole would be taken to the summit but wouldn't be used.



Hudson and Matthew in the front of the car with less than 30 minutes before our arrival.



A small house in the foreground with the Hill Country's landscape clearly visible in the background.



KG5OWB's truck hitch vertical with a 9:1 unun. He was operating CW, FT8, and SSB during the activation from the cabin, safe from the still chilly winds in the morning.



We were ecstatic to see the entrance of the park.



I was surprised to see that you'd need to check the health of your horse before entering the park. I would later learn that locals call this part of Bandera "Bantucky" as it's not uncommon to see people ride horses to restaurants.

Once we got to the park, we needed to go and pay for parking/tickets and ask for advice about the hike. While in the parking lot, we ran into KG5OWB running a POTA activation from his truck and also got some information about what activating the park was like.

Once everything was sorted out, we drove up to the for the trail parking lot and began our hike up to the summit.

The hike seemed initially challenging but in practice it wasn't that bad. It took us about two hours to get up to the summit. There were a few parts that it was steep but nothing that going slower wouldn't fix. The big challenge was the crumbly trail due to all of the limestone but again it's something that a slower pace and careful footing can take care of.





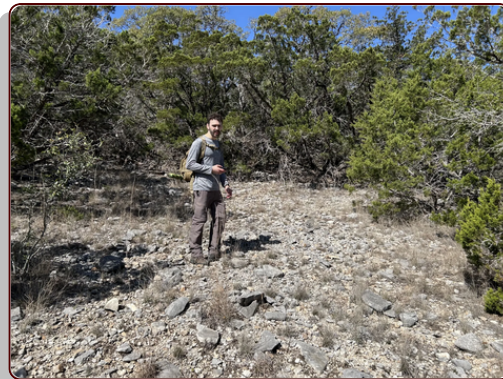
We found a candidate for a new shack for the radio club! Low noise floor and low cost!



From left to right: KI5UXW, KL4LJ, KJ5IIF



After two hours of hiking, we finally arrived at the activation zone and began setting up. I was running 10m SSB with my Xiegu G90 and my 66' EFHW thrown over a tree with a total height of about 12' off the ground at the apex. Matthew set-up further down with his ICOM IC-705 and Super Antenna MP-1 the hill and planned to run FT8.



KL4LJ in the clearing within the SOTA activation zone. We couldn't have asked for a better spot!



KL4LJ and KJ5IIF setting up the IC-705 and the Super Antenna.



My Xiegu G90 and the ARRL End Fed Halfwave Kit enjoying the S0 noise floor on 10m!



KL4LJ and KJ5IIF working FT8 in the distance with my 40m EFHW barely visible.



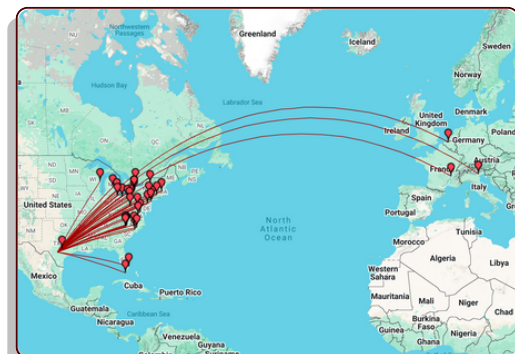
KL4LJ working the calling station with W5AC and his own call. During this activation, we played pass the mic to allow every station to work everyone here.



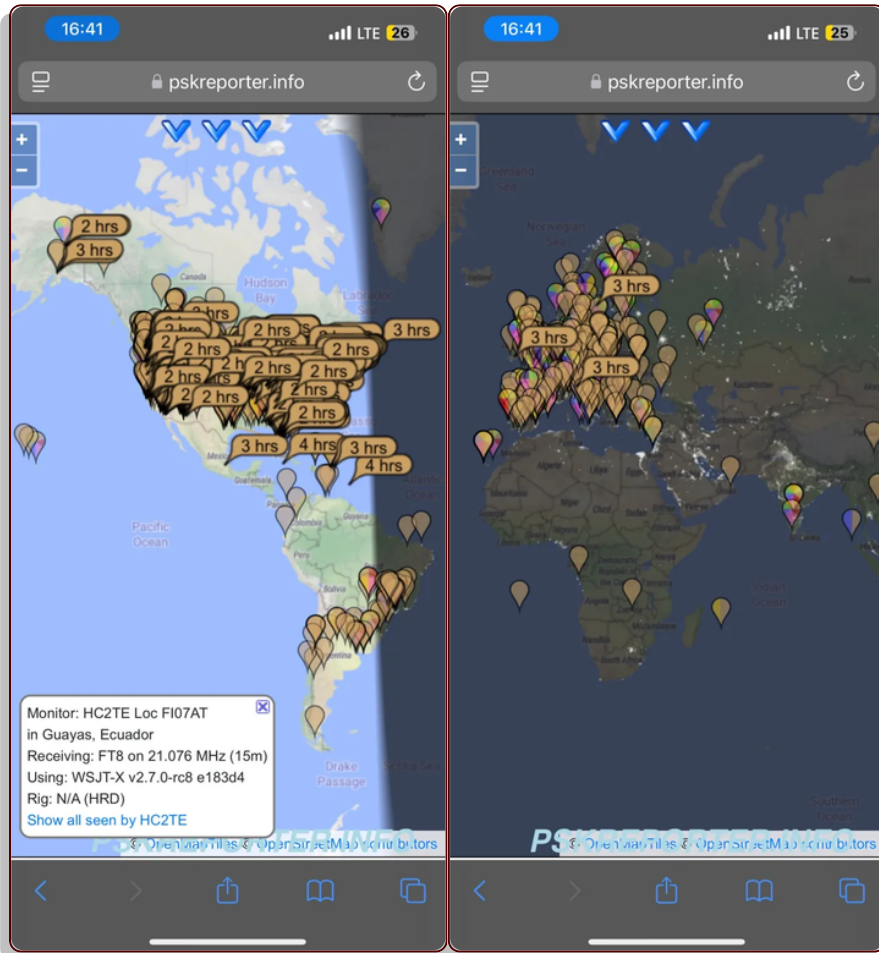
KJ5IIF taking his turn working the SSB station after running from his FT8 station.



KL4LJ works a station on SSB with both his call and W5AC while KI5UXW logs the old school way with pencil and paper!



A map of all of the contacts made during the activation. The closest contact was with KI5ZWV, a good friend of mine (Callsign: K5LBJ).



Screenshots of KJ5IIF's PSKReporter results on 15m.

I worked 36 stations while the rest of the crew worked 34-35 in two hours. There were a few stations that didn't stick around or faded out so we didn't get to pass the mic.

It was the best operating environment that I've ever been in: the noise floor was an honest-to-God S0, my signal could be heard far with nothing more than 20W and an EFHW, and there was a pile-up with just about every call. It was fantastic and I found myself on the two hour hike back to the car thinking about what I could change to make more contacts and what summits I could conquer next. I'd like to say many thanks to Hudson Spillers (KL4LJ and Texas A&M Class of 2024) and Matthew Cadman (KJ5IIF and Texas A&M Class of 2025) for starting me off into this new chapter of my ham radio adventure.



The hearty but tired crew of the W5T/ST-012 expedition giving a "Gig 'Em" on their back to Austin (for K15UXW) and College Station (for KL4LJ and KJ5IIF).



SOUP!

by Katherine KT5KMF



The Student Operational Upper-Air program, or SOUP, is run by the atmospheric sciences department every spring and gives meteorology students the opportunity to learn how to launch weather balloons and collect data from them. This spring, Texas A&M was asked along with several other universities to help with a project being conducted by the Center for Western Weather and Water Extremes (CW3E) studying atmospheric rivers.

NOAA defines atmospheric rivers as “relatively long, narrow regions in the atmosphere – like rivers in the sky – that transport most of the water vapor outside of the tropics.” Due to the large quantities of water vapor that they move, atmospheric rivers often cause significant heavy precipitation or flooding events. Since flooding can have direct impacts on many communities every year, it’s important to understand phenomena like atmospheric rivers.

CW3E asked the Texas A&M group to launch a total of 19 balloons during the month of February. Students would split into two groups, one to help prepare and launch the balloon, and one to head up to the observatory and set up the computers for data collection. Using the Texas Aggie Storm Chasers’ main frequency, the two groups communicated back and forth with HTs.

To prepare a balloon for launch, the first step is to carefully inflate the balloon. Then the radiosonde and parachute are attached to the balloon. The balloons are inflated next to the meteorology building to shield from wind, but once one is ready, the group will walk it out to an open field so that they have enough room to launch. Since oil from hands can freeze and cause the balloon to pop early once it gets high enough, anyone who gets too close to the balloon has to wear gloves.

After they reach the field, the balloon group will take current weather observations, including temperature, wind speed and direction, and relative humidity. These are compared to the data being received from the radiosonde on the observatory computers to make sure everything is working properly. The final step is to get permission to launch from the tower at Easterwood Airport. Then the balloon is launched!

After launch, the balloon group will head up to the observatory to help monitor the data collection. Depending on the direction the balloon is traveling and how far it is able to travel, sometimes the radios in the observatory are unable to receive a signal. Antenna adjustments often have to be made so there aren’t large gaps in the data being collected. Radiosondes are able to collect data about the wind speed and direction using GPS to track their position. Information about temperature, pressure, and humidity are recorded as well.

The SOUP program saw a lot of successful launches this spring, and meteorology students were able to learn about weather balloon launch procedures as well as applications of the radiosonde data they collected.



W5AC Remote FlexRadio Station

by Ian AE5ID

While the shack gives the club a place to meet, due to building constraints operating HF from there is not feasible for the near future. In order to operate HF from the shack, a remote rig has been installed on the Oceanography and Meteorology building. This radio is controlled using computer software installed in the shack or using the software on any computer connected to the campus network or VPN.

For the antenna, a fan dipole was constructed with elements for 6, 10, 12, 17, 20, 30, 40, and 80 meters. 15 meters was planned to use the 40 meter element as a $3/2$ wave dipole to reduce elements. Below is the plan for each band's designed center frequency and the element length for each side of the dipole.

Band	Center Frequency	Length
80m	3.70 MHz	69' 10"
40m	7.15 MHz	36' 2"
30m	10.1 MHz	25' 7"
20m	14.2 MHz	18' 3"
17m	18.1 MHz	14' 3"
12m	24.9 MHz	10' 4"
10m	28.6 MHz	9' 0"
6m	52.0 MHz	4' 12"

The dipole was constructed using #10 AWG stranded wire, ring terminals, a balun, PVC pipe, some rope. First, the wire lengths were cut for each side of the dipole and a ring terminal was crimped for the connection to the balun. Since we wound up with 16 cut elements, organization was critical to save time and prevent issues. Additionally, PVC separators were cut using a distance of 3 inches between elements and at least 1 inch on the ends. An additional "element" hole was added at the bottom such that a rope could be connected later to prevent twisting of the dipole. This gives separators with anywhere from 9 to 2 holes for an 8 element fan dipole.

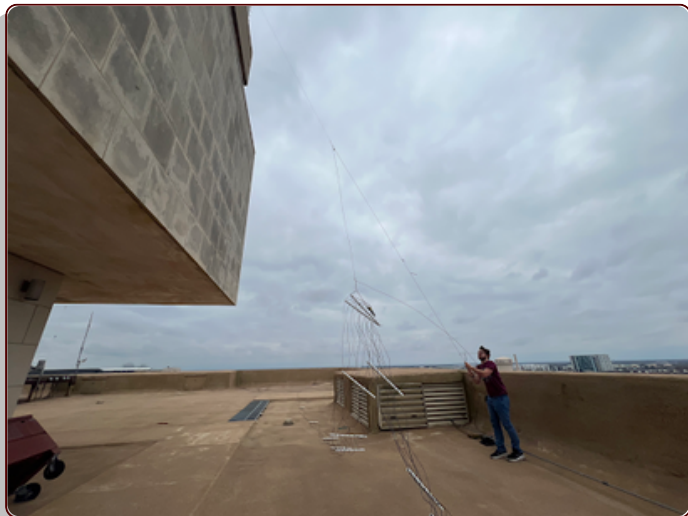
The next step was assembling the elements onto the balun and separator. The ring terminal for each band on one side of the dipole was connected to a terminal on the balun and the wire was run through the first PVC separator. The longest band was on top, giving the order 80, 40, 30, 20, 17, 12, 10, 6 for each of the wires. Each one was strung through a hole drilled

through and then looped around and strung through the same hole to prevent the wire from moving after installation. This process was repeated for all the elements while keeping enough slack for the wire connections to the balun. For the separators later on, one of the wires is connected but does not continue on. To align the separators, the highest frequency element was connected, followed by the 80 meter element. This allowed us to check the angle to ensure it was perpendicular. For later elements, a person pulled on each of the separators to keep them taut while someone strung the elements in between. This process was repeated until no more separators were left for that side.



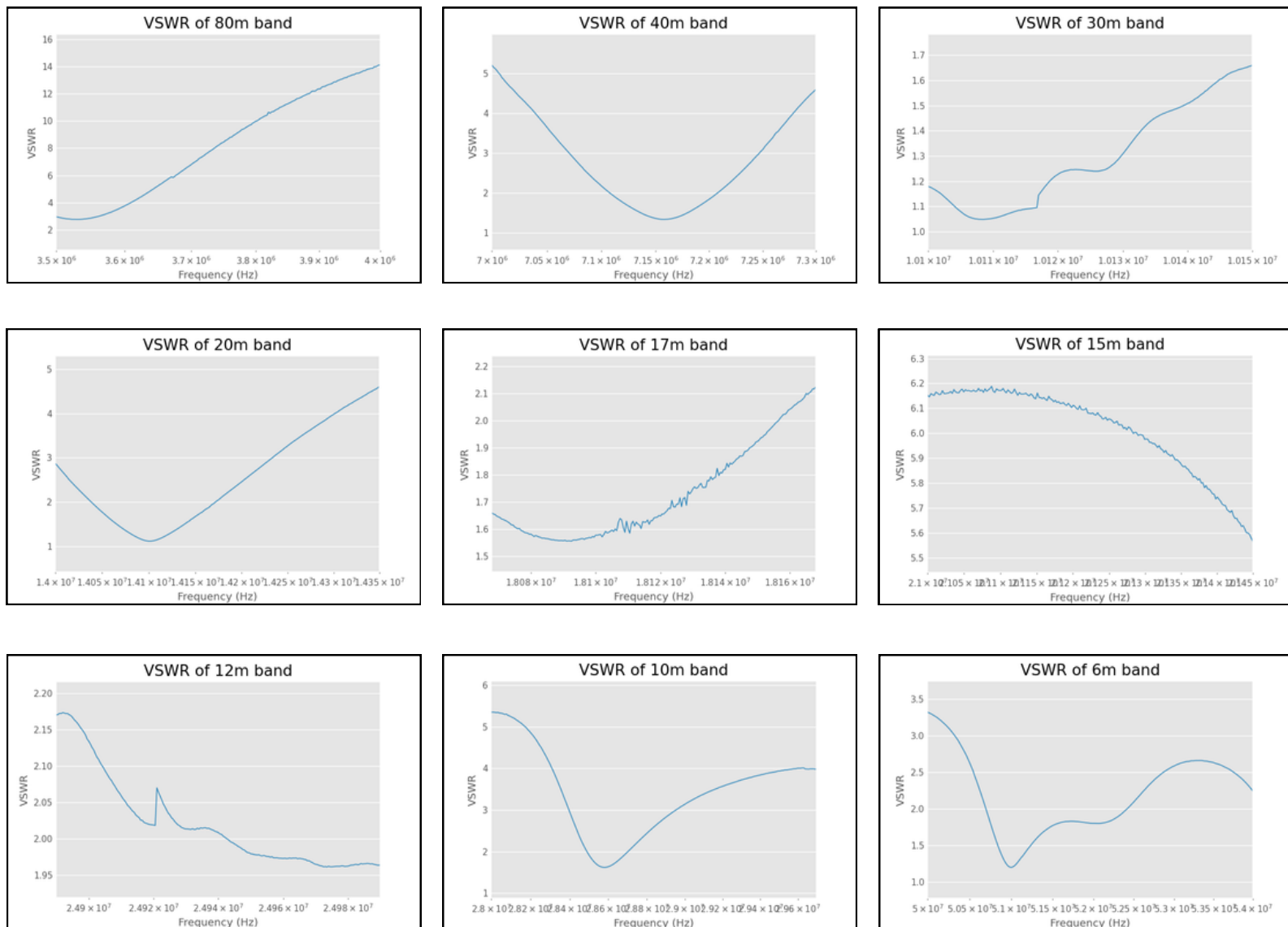
This process was repeated for the other side of the dipole. To provide more strain relief, paracord was run through the separators closest to the balun and tied to create a loop. A section was also tied to the balun to add even more strain relief. Lengths of paracord were added to the ends of the dipole for attachment to building anchors and a screw link for the center connection of the inverted-V. Below the antenna is held up along the street after construction is complete.

The next day, the antenna was installed on the roof of the Oceanography and Meteorology Building. Each end was attached to anchors in the wall around the building and the center was connected to a pulley loop between the lower roof and upper roof. On an unrelated note, make sure to attach the coax when raising an antenna.



To tune the fan dipole, we began with the longest element. There are two options for tuning, either folding back or cutting the wire. While folding the wire back is non-destructive, it requires an adjustment approximately twice that of cutting. For the 80 meter element, each step of adjustment also required that the guy lines at the ends have more slack to account for less wire along the length. For each tuning step, the dipole was lowered, the spacers moved inwards to allow for a section to trim, the wire trimmed, guy lines loosened, and then the dipole was raised again. After a few times raising and lowering the dipole, it was suggested that we use a carabiner instead of tying the pulley loop into a knot every time. Once the 80 meter element was finalized, we moved onto the 40 meter section. For the 40 meter element and shorter, the separators needed to be moved for all wires at once and kept perpendicular. Someone held the next separator towards the balun and each wire was adjusted using the same method as during construction. We repeated this process for all bands until the desired tuning was achieved.

Below are charts of the antenna's SWR for each band.



The Flex 6400 is powered by a HP server power supply that has been modified to provide 13.8V instead of 12V. It is installed in the bottom of the W5AC repeater cabinet on the 14th floor. The network connection sits on W5AC's network and ports 4993/TCP and 4994/UDP are forwarded to the campus network. Flex also uses 4992/UDP for the discovery protocol, but due to constraints on the campus network, this discovery traffic was not visible. To allow the software to connect, a script was written in python that emulates enough of the discovery protocol for the software client to connect. This discovery protocol contains a sequence number and timestamp that must be corrected as well as the IP address that the client software connects to. To use the Flex, download SmartSDR version 3.8.21 and ask me for the discovery script.

April Events

Shack Study Sessions (WEB 169)

- Tuesday, April 1st, 3pm - 5pm
- Tuesday, April 15th, 12pm - 3pm

Twisters Movie Night

- Wednesday, April 2nd at 7pm
- WEB 236C

Physics Festival

- Saturday, April 5th at 10am
- Inside Blocker

April Meeting

- Tuesday, April 22nd at 7pm
- Testing before at 6pm
- Officer elections!
- WEB 236C

On-Campus Operation

- Friday, April 25th at 11am
- E-Quad

QRP Labs Kit Build

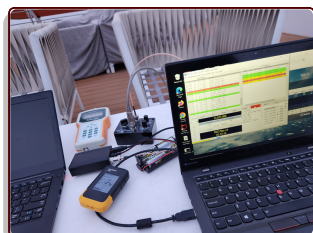
- Saturday, April 26th at 11am
- WEB patio
- More info below!

W5AC Calendar**April 2025**

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1 Shack Study Session	2 Twisters Movie Night	3	4	5 Physics Festival
6	7	8	9	10	11	12
13	14	15 Shack Study Session	16	17	18	19
20	21	22 April Meeting (Elections)	23	24	25 On-Campus Operation	26 QRP Labs Kit Build
27	28	29	30			

QMX+

- \$125 Base cost
- 160m-6m bands
- Digital, CW, and SSB (beta)
- 3-5W output



A QDX set up to run FT8 on a cruise ship

QMX

- \$102.47 Base Cost
- 80, 60, 40, 30 and 20m OR 20, 17, 15, 12, 11 and 10m OR 60, 40, 30, 20, 17 and 15m
- Digital, CW, and SSB (beta)
- 3-5W Output

QDX

- \$69 Base cost
- 80, 60, 40, 30 and 20m OR 20, 17, 15, 12, 11 and 10m bands
- Digital modes only
- 5W output
- Monoband version available for \$65 (choose 2200m - 10m)

QCX

- \$57.79 Base Cost
- 160, 80, 60, 40, 30, 20 OR 17m
- 3-5W output power
- CW only

QCX+

- Same Circuit - larger

50W CW and Digital (FSK) Amplifier

- \$29.50 Base Cost
- 80m, 40m, 30m or 20m bands
- Meant for QCX (need PTT out)

50 Ohm, 20W Dummy load

- \$8.50 Base Cost
- Good Soldering Practice

W5AC will be hosting a QRP Labs Kit Build event at the end of April! Come build your QRP Labs kit with us, and you'll have a chance to hang out with other club members, get help from other members who have built these kits before, and borrow club or members' tools if you don't have your own. Order soon to make sure your kit comes in before the event! (Kit options and basic details are listed above)